TECTONIC EVOLUTION OF DHAKA-GAZIPUR TERRACE AND ENGINEERING GEOLOGY OF MADHUPUR CLAY RESIDUUM IN BANGLADESH

MIR FAZLUL KARIM, Geological Survey of Bangladesh, Pioneer Road, Segun Bagicha, Dhaka 1000, Bangladesh

Dhaka-Gazipur Terrace is a part of Madhupur Tract, located in the central part of Bangladesh. The tract is a structural high that extends from the folded hills in the eastern fringe of Bengal basin. It is formed of Madhupur Clay Residuum and exposed as a monoclinal limb. Due to higher elevation than the surrounding plains, the terrace has become a seat of urban and industrial development. For continuing expansion and sustainable development, it is necessary to understand the geomorphology, geotechnical behaviour and tectonic setting of the terrace.Present study indicates that the terrace is composed of number of blocks, separated by plastic deformation, due to compression force of Late Pleistocene movements. A series of dendritic to trellis drainage system has been developed on the terrace following the fractures or shear zones. Three tectonic bench-levels are identified that cause variation in weathering state of Madhupur Clay Residuum. The terrace is formed of three broad geomorphic units consisting of raised tableland, moderately dissected or rugged complex of gullies and round ridges; and low plains or depressions. The physical, chemical, shear strength properties of the materials from different geomorphic units are determined. The results indicate tectonic influence in the variation of the properties. An engineering geology map of Dhaka-Gazipur Terrace is prepared for Geological Survey of Bangladesh.A system for geotechnical land-use pattern is proposed for urban and industrial planning. Potential geological hazards like swelling soil, slope-failures and earthquake risk shear zones are identified. Possible ground improvement techniques and restorative measures are suggested.